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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,097

11/02/2006

Eric Allain

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EXAMINER

MARX, IRENE

ART UNIT

PAPER NUMBER

1651

NOTIFICATION DATE

DELIVERY MODE

03/25/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patents-US-NY@novozymes.com

Office Action Summary	Application No. 10/586,097	Applicant(s) ALLAIN ET AL.	
	Examiner Irene Marx	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) 21-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 35-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/2/06, 6/4/08</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

The application should be reviewed for errors.

To facilitate processing of papers at the U.S. Patent and Trademark Office, it is recommended that the Application Serial Number be inserted on every page of claims and/or of amendments filed.

Applicant's election with traverse of Group II, claims 35-40 on 12/23/09 is acknowledged.

The traversal is on the grounds that there is a genus/species relationship between the inventions because ethanol is an example of a fermentation product.

This is not found persuasive the claims are directed to distinct inventions that have distinct steps. For example claim 1 does not require the steps of milling, liquefying, saccharifying and fermenting. In addition, there is no clear indication that the enzymes required are necessarily the same.

Regarding the Lee *et al.* and Goes *et al.* references, the statement that the references do not teach applicant's claimed invention is noted. However, this allegation appears incorrect, since the references teach the addition of carbohydrate degrading enzymes and surfactants to a fermentation process, which is the claimed invention of claim 1.

For these reasons, the restriction requirement is deemed proper and is adhered to. The restriction requirement is hereby made FINAL. .

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 35-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 35 is vague, indefinite and confusing in lacking a conjunction at the end of the claim. It is unclear whether "and" or "or" is intended.

Claim 35 is confusing in the phrase "carbohydrate-source generating enzyme". The nature of the enzyme is unclear. It is apparent that product produced or generated is a carbohydrate rather than a "carbohydrate-source." Here the raw material of whole grains is a carbohydrate source while the saccharified materials obtained and subjected to action of the enzymes appear to be carbohydrates.

Claim 35 is confusing in lacking antecedent basis for "the fermentation media"

Claims 35-40 are incomplete in the absence of a recovery step for the ethanol product produced.

While there is no specific rule or statutory requirement which specifically addresses the need for a recovery step in a process of preparing a composition, it is clear from the record and would be expected from conventional preparation processes that the product must be isolated or recovered. Thus, the claims fail to particularly point out and distinctly claim the "complete" process since the recovery step is missing from the claims. The metes and bounds of the claimed process are therefore not clearly established or delineated.

Claim 40 is vague, indefinite and confusing in the recitation of "a mixture of acidic fungal alpha-amylase activity (AFAU) and glucoamylase activity (AGU) had having AFAU per AGU of at least 0.1. It is unclear what is intended by "had having " in this context or what is intended by "AFAU per AGU of at least 0.1". Is a ratio intended? Is this activity or concentration? Clarification is required.

Claim 38 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee *et al.*, of record, taken with Silver U.S. Patent No. 4,409,329), of record, Miller (U.S. Patent No. 4,330,625) and Bisgaard-Frantzen *et al.* (US 2004/0023349), newly cited.

The claims are directed to a process of making ethanol by milling grain, saccharifying a liquefied grain product and fermenting the saccharified material with a microorganism wherein the fermentation media is contacted with at least one surfactant and/or at least one carbohydrate degrading enzyme.

Each of Lee *et al.* and Silver teaches a fermentation process for the production of ethanol using carbohydrate degrading enzymes and a surfactant. See, e.g., page 300, paragraph 5, respectively col. 1, lines 27-40, col. 3, lines 25-31 and col. 5, lines 7-48.

The references differ from the invention in that the source of the saccharified material is not whole grain. However, Miller *et al.* adequately demonstrate that the milling of grain followed by liquefying and saccharifying is old and well known in the art. See, e.g., Col. 3, lines 24-32. The reference clearly states that saccharified material obtained is suitable provide substrate sugars for the fermentation to ethanol. See, e.g., col. 1, lines 18-20.

The references differ from the claimed invention in the use of glucoamylase and acidic fungal alpha amylase as the enzymes used to hydrolyze carbohydrates. However, Bisgaard-Frantzen *et al.* disclose the use of acidic fungal alpha-amylase and glucoamylase in combination to hydrolyze carbohydrates for the production of ethanol from corn mash, which is derived from whole grain. See, e.g., Example 3. The AFAU per AGU appears to be at least 0.1.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the process for producing ethanol of Lee *et al.* and Silver by using corn as the raw material and subjecting it to milling followed by liquefying and saccharifying as taught by Miller *et al.* and using the enzymes acidic fungal alpha-amylase and

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glucoamylase in combination in the process as suggested by the teachings of Bisgaard-Frantzen *et al.*, for the expected benefit of maximizing the yield of valuable ethanol from whole grains for industrial or pharmaceutical applications and for human consumption.

Thus, the claimed invention as a whole was clearly *prima facie* obvious, especially in the absence of evidence to the contrary.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is (571) 272-0919. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 .

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Irene Marx/
Primary Examiner
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